

THAT WHICH IS CLAIMED:

1. An ultrasonic inspection device, comprising:
a housing defining a channel for the passage of an ultrasonic signal;
a transducer in communication with the housing for transmitting and receiving
5 the ultrasonic signal therethrough;
a rotating reflector in communication with the channel to reflect the ultrasonic
signal at two or more preset angles; and
a locking mechanism to lock the rotating reflector at the preset angles.
2. An ultrasonic inspection device according to Claim 1, further comprising a
10 fixed reflector in communication with the channel for reflecting the ultrasonic signal.
3. An ultrasonic inspection device according to Claim 2 wherein the fixed
reflector directly reflects the ultrasonic signal to and from the transducer.
4. An ultrasonic inspection device according to Claim 2 wherein the rotating
reflector directly reflects the ultrasonic signal to and from the transducer.
- 15 5. An ultrasonic inspection device according to Claim 2 wherein the fixed
reflector comprises a rod with a polished 45 degree bevel and the rotating reflector
comprises a rod with a polished 45 degree bevel.
6. An ultrasonic inspection device according to Claim 1, further comprising a
handle attached to the rotating reflector for rotation of the rotating reflector.
- 20 7. An ultrasonic inspection device according to Claim 6 wherein the locking
mechanism comprises a spring-loaded ball in the housing and at least one detent
defined by the handle for selectively receiving the spring-loaded ball to rotatably lock
the rotating reflector, wherein the detents correspond with the preset angles.
8. An ultrasonic inspection device according to Claim 1 wherein the locking
25 mechanism comprises a spring-loaded ball in the housing and at least one detent
defined by the rotating reflector for selectively receiving the spring-loaded ball to
rotatably lock the rotating reflector, wherein the detents correspond with the preset
angles.

9. An ultrasonic inspection device according to Claim 1 wherein the housing defines an aperture for the passage of the ultrasonic signal.

10. An ultrasonic inspection device according to Claim 9 wherein the aperture is arcuate and spans at least 90 degrees.

5 11. An ultrasonic inspection device, comprising:
a housing having a channel for the passage of an ultrasonic signal;
a transducer in communication with the housing for transmitting and receiving
the ultrasonic signal therethrough;
a fixed reflector in communication with the channel to reflect the ultrasonic
10 signal;
a rotating reflector in communication with the channel to reflect the ultrasonic
signal at a plurality of preset angles;
a handle attached to the rotating reflector for rotation of the rotating reflector;
and
15 a locking mechanism to lock the rotating reflector at the preset angles.

12. An ultrasonic inspection device according to Claim 11 wherein the fixed reflector comprises a rod with a polished 45 degree bevel and the rotating reflector comprises a rod with a polished 45 degree bevel.

20 13. An ultrasonic inspection device according to Claim 11 wherein the locking mechanism comprises a spring-loaded ball in the housing and at least one detent defined by the handle for selectively receiving the spring-loaded ball to rotatably lock the rotating reflector, wherein the detents correspond with the preset angles.

25 14. An ultrasonic inspection device according to Claim 11 wherein the locking mechanism comprises a spring-loaded ball in the housing and at least one detent defined by the handle for selectively receiving the spring-loaded ball to rotatably lock the rotating reflector, wherein the detents correspond with the preset angles.

30 15. An ultrasonic inspection device according to Claim 11 wherein the housing defines an aperture for the passage of the ultrasonic signal.

16. An ultrasonic inspection device according to Claim 15 wherein the aperture is arcuate and spans at least 90 degrees.

17. A method of inspecting a component, comprising the steps of:
positioning an ultrasonic inspection device proximate the component to be
5 inspected such that an aperture defined by the ultrasonic inspection device opens
toward the component;
locking a rotating reflector at a preset angle;
transmitting an ultrasonic signal through the ultrasonic inspection device such
that the ultrasonic signal reflects from the rotating reflector toward a portion of the
10 component;
moving the rotating reflector to another preset angle to facilitate inspection of
another portion of the component; and
transmitting additional ultrasonic signals through the ultrasonic inspection
device such that the ultrasonic signal reflects from the rotating reflector toward an
15 additional portion of the component.

18. A method according to Claim 17 wherein moving the rotating reflector
comprises rotating a handle that is rotatably attached to the rotating reflector prior to
transmitting additional ultrasonic signals.

19. A method according to Claim 18 wherein moving the rotating reflector
20 comprises rotating the handle to a third preset angle prior to transmitting additional
ultrasonic signals.

20. A method according to Claim 19 wherein moving the rotating reflector
comprises:

rotating the handle to a plurality of preset angles and transmitting additional
25 ultrasonic signals with the handle at each preset angle to inspect a first portion of the
component; and

advancing the ultrasonic inspection device along the length of the component
to a second portion of the component following the inspection of the first portion of
the component and repeating the transmission of ultrasonic signals with the handle
30 sequentially rotated to the plurality of preset angles to inspect the second portion of
the component.

21. A method according to Claim 17, further comprising the step of advancing the ultrasonic inspection device along the length of the component while the rotating reflector remains locked at the preset angle and the ultrasonic signals are transmitted so as to inspect a lengthwise portion of the component at the preset angle prior to moving the rotating reflector to another preset angle.

22. A method according to Claim 21, further comprising the step of again advancing the ultrasonic inspection device along the length of the component after moving the rotating reflector to another preset angle to inspect further portions of the component along the length of the component at the other preset angle.